Solent University

Faculty of Business, Law and Digital Technologies

**Market Analysis for the U.S Automobile Market**

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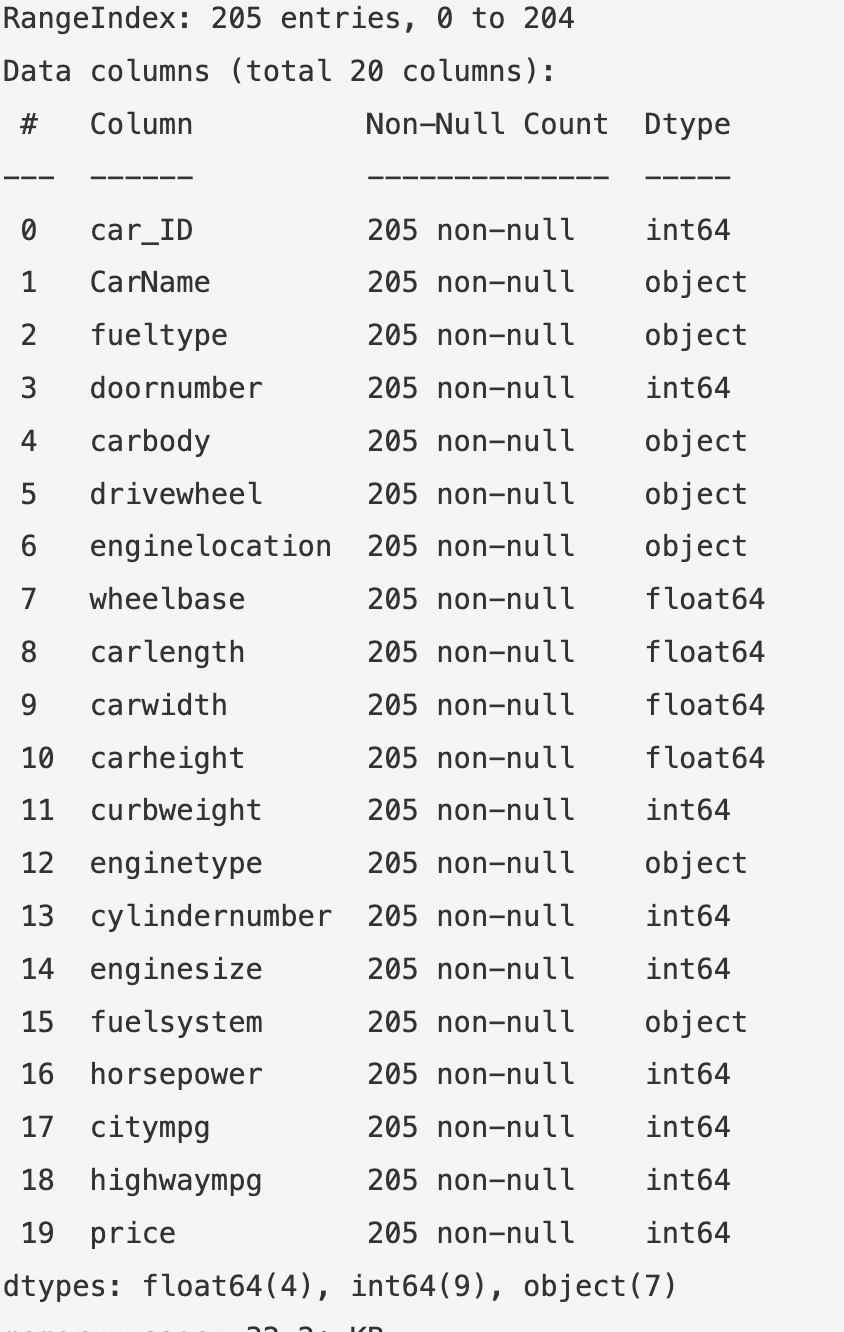
# 1. Overview

A Chinese company has recently indicated its interest in entering the US automobile market, it plans to setup a manufacturing and sales arm of the business in the US. Just like any business, this company is interested in understanding what influences automobile users in the US market in purchasing cars, this will help the company to better understand the features of cars that will typically drive sales in the US market. For this analysis, we have a historical data of car sales in the US market.

There are interesting features in this dataset that will be considered while analysing the dataset.



Our data set has a total of 13 numerical columns and 7 object columns, in total the dataset is made up of 205 rows and 20 columns. Each numerical column represents that total number of the numerical features we will be using for our analysis. The figure above gives a summary of the statistical representation of the dataset and the distribution of the dataset.



Using the info() method, we retrieve all the information we need to know about the dataset. This is very crucial for any pre-processing exercise that we need to carry out on the dataset. One very key observation from the display result is that can see the data types of each feature of the dataset and, we have concluded that there are no null values in our dataset.

some of key features includes;

1. **The Car Body Type**: The car body type, shows what is more predominant in the US automobile market based on the dataset. The body style indicates what is obtainable in the American Automobile industry and the distribution of the body type gives an insight to what is predominant in the American car market. This is one of the key features that would enable the us make the best business decision on the body style of the car the Chinese company should focus on manufacturing to attract sales.
2. **Price**: This is an important considering for any business setup, we aim to get a total summary of sales of each brand of cars. This will help the Chinese company understand the purchasing habit of the American population when its related to automobiles. The more sales we get from a style of automobile, it would market business sense to manufacture cars with similar features. This is will enable the company have a fair share of competition in the US market as it is expected that customers will be attracted to cars with similar features.
3. **Door Number**: The car door number, is an important feature that will give an insight to the category of car users. Amongst the younger generation, it may be ideal to get a coupe (2 door car) that gives the impression of a sports car, than a 4 door car, which the older generation / families. Would rather go for. Decisions that can also influence the car door option includes safety, it would be safer to drive in a 4 door car than a 2 door car.

The font style to use throughout your document is Trebuchet MS as this the font style recommended by Solent University. The font size for text in the body of your document should be 12 pt. Headings should have a suitable font size e.g., 18 pt for main section headings, 16 pt for sub-headings and 14 pt for sub-sub-headings.

In this section, you should explain the aim and objectives of the project. You should provide a summary of the data set briefly discussing the main features of the data. You should also detail any interesting observations regarding the data set.

You should also include a table summarising what requirement have been achieved.

Table 1: Requirement Completion

|  |  |
| --- | --- |
| **Requirement** | **Status** |
| Load data from a CSV file | Completed |
| Retrieve a record for an individual car by id | Completed |
| Retrieve all cars for a specified cylinder number | Completed |
| Retrieve all cars in the specified car body | Completed |
| Retrieve a [specify which columns you have retrieve] related to an individual car by id | Completed |
| Retrieve the car names alphabetically | Completed |
| Retrieve summary of sales (total car price) for each car body | Completed |
| Retrieve the top 5 car sale by price (the most expensive) and per car body | Completed |
| Retrieve [specify data that you chose] of cars | Completed |
| Display the number of cars per fuel system using a bar chart | Completed |
| Display the horsepower of the top 5 car sale by price (the cheapest) using a subplot | Completed |
| Display [specify your selection] to present the customers’ buying behaviour using [specify your selected visualisation] | Completed |

**Status options:** Completed/ Partially Completed/ Not Attempted

A very brief summary (a couple of sentences) should be included to explain the structure for the remainder of the report.

# 2. Project Implementation

A heading should not be followed directly by another heading. There should be some connecting text. Thus, you should briefly describe the structure of this section here. Then, you can explain the detail in the individual section below. Your explanation should be clear, concise and justified.

#### 2.1 Project structure

Explain the structure of your project. Your explanations should include appropriate detail and terminology.

It would be useful to include a diagram showing your project structure. The diagram can be included in this section as a figure or, if it is large, in the appendices and cited in this section.

You should ensure that any figures or tables are appropriately label following suitable conventions. Generally, the figure or table is centred, and figure captions are placed below a figure and table captions are placed above a table.

The example below shows a figure with a caption.

|  |
| --- |
| Diagram  Description automatically generated |

Figure 1 Customer Behaviour of Car Sale Market Project Structure (Andritsch, J., 2022)

The example of a figure caption above includes a reference. If an image is taken without any modifications from another source, then it should include a reference as shown in the example above. If the image has been adapted then this should be stated in the caption e.g., Figure 1 – Car Market Analysis Project (adapted from Andritsch, J., 2022)

#### 2.2 Modules/ Functions

Explain the implementation of each module/function in your project. You can present each module/function using sub-section topic. More complicated modules/functions should have greater detail whilst smaller and similar functions can be grouped together in your explanation. You may wish to include relevant code snippets to support your explanations. However, you should ensure that you do not simply restate or summarise what is shown in the code but explain how it works (what, how and why).

You should include code snippets as figures with appropriate captions. An example of a code snippet is shown below:

|  |
| --- |
|  |

Figure 2 Code to perform size checks on entities

The code snippet should be short, concise and appropriate formatted. If the code snippet is from another source, then you should also include a suitable reference.

##### 2.2.1 Module/ function name

Explain the functionality implemented in this module/function. Relevant guidelines mentioned in the previous sections should also be followed here.

##### 2.2.2 Module/ function name

Explain the functionality implemented in this module/function. Relevant guidelines mentioned in the previous sections should also be followed here.

##### 2.2.3 Module/ function name

Explain the functionality implemented in this module/function. Relevant guidelines mentioned in the previous section should also be followed here.

##### 2.2.4 …

Explain the functionality implemented in this module/function. Relevant guidelines mentioned in the previous sections should also be followed here.

When you explain in a detail for each module/function a proper example or justification should present. For example, if you implemented your project using main module to control the logical work of your project and utilises the other modules, it may be useful to include an example or two of how the main module utilises the other modules to deliver a function. You may, for example, present this as a diagram or a series of annotated function calls or if you explain your implementation for visualisation, you can discuss how you have derived with specific selection of your own choice for visualisation (what and why). You should include suitable screenshots of the final visualisations.

# 3. Recommendations

You should briefly summarise what has been achieved and make some suitable recommendations for future work.

# 4. References

While extensive referencing is not expected for this assessment, you may have utilised some resources to help you with the design. If so, these should be cited using an appropriate and recognised academic style (e.g., Solent Harvard). For help on this, please see the following guide: <https://libguides.solent.ac.uk/ld.php?content_id=32039810> for help with referencing.

Any references should be included here. This list should include references that have been cited in this report.

# 5. Appendices [please remove if you don’t have one]

Any appendices should be included here.